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Fluorosis in Domestic Animals*

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INTRODUCTION

If I had been asked about the importance of fluorosis in the domestic animals in this country about three years ago, when I first began to work on the problem, I would have been inclined to say that fluorosis was little more than a scientific curiosity. The work of Blakemore, Bosworth & Green in Bedfordshire, the work of Green in Lincolnshire and my own observations in Scotland have compelled me to modify that opinion. Further, when it is realized that there are at least 28 industrial processes utilizing or disseminating fluorine compounds, it can readily be appreciated that there are distinct possibilities of fluorosis occurring in areas additional to those in which it has already been reported. Though the characteristics of the dental lesions appear to be fairly well known, it seems that the connection between lameness, stiffness and fluorosis may not always be recognised.

SOURCES:

In presenting to you an outline of the effects of fluorine intoxication in the domestic animals, I have thought it well first to discuss with you the principal sources of fluorine as a cause of poisoning. These may be summarized under three headings: (1) Water supplies, (2) Contamination from industrial sources, and (3) The use of fluorine containing phosphates as mineral supplements. Though the possibility has been mooted, I know of no evidence incriminating the use of phosphatic manures.

Velu (1933) in a very extensive study of the conditions in North Africa was able to establish that fluorine intoxication in that part of the world was caused by contamination of the water supplies which were drawn from areas rich in phosphatic deposits containing substantial amounts of fluorine.

Seddon in 1945 described chronic endemic dental fluorosis as occurring amongst sheep in Queensland, as a result of the ingestion of water from deep artesian wells; this water contained twelve parts per million of fluorine. It is known that in certain districts in this country, the water from deep wells contains an unduly high proportion of fluorine. In probing into the fundamentals of this problem, I made the surprising discovery that the geological survey of Great Britain is far from being complete. We have, therefore, to take notice of the possibility that contamination of water supplies may occur in districts in this country where its existence is unsuspected.

Considerable attention has been focused on the occurrence of fluorine poisoning in the vicinity of aluminium factories, all of which use cryolite—a sodium aluminium fluoride—as a flux in the electric furnaces used to reduce aluminium oxide to aluminium. The first description was that given by Cristiani in 1927, though actually his description refers to cases originally observed in 1918. Slagsvold in 1935 reported that for several years the disease had appeared in cattle and sheep grazing round Norwegian aluminium works. A particularly clear record of the condition in the neighbourhood of an aluminium factory in North Italy was that given by Bardelli & Menzani in 1935. For the past three years, I have been investigating the condition in cattle and sheep in the vicinity of a large aluminium factory in Scotland.

Blakemore, Bosworth & Green in 1941 described their experience of fluorine poisoning of stock in the immediate neighbourhood of brick works in Bedfordshire.

More recently, Dr. Green has told me of cases occurring in Lincolnshire in an area where ironstone is being calcined.

Though the information has only recently reached this country, it was in 1941 that Lourens described fluorosis in Holland in a herd of cows pastured near a plant manufacturing chemical fertilizers.

A great deal of work has been done on the danger that exists if rock phosphate containing undue amounts of fluorine is used as a source of phosphate in the manufacture of mineral supplements for the diet of livestock. Some particularly useful work on this subject has been done in South Africa, Australia, India and the United States. This was ably dealt with in a comprehensive paper by Pierce in 1938.

AREA INVOLVED:

At one time it seemed to be thought that the area around a factory which might be contaminated was a relatively restricted one. It is clear that the extent of the area involved is dependent on the quantity of fluorine that is discharged into the atmosphere and the physical geography of the district.

In Scotland we have an instance of severe contamination extending from a holding two miles south of a factory to a farm four and a half miles north of the factory.

CLINICAL SIGNS:

There is a most interesting variation in the effects produced by the ingestion of fluorine in the domestic animals; this variation appears, at least in part, to depend upon the rate of ingestion.

The continued ingestion of relatively small amounts of fluorine may produce only dental changes and these changes are confined to animals grazing on contaminated pasture during the period when their permanent teeth are being formed. Adult animals, whose permanent teeth have erupted, may graze without ill-effects of any kind on pastures sufficiently contaminated with fluorine to cause dental lesions in all adolescent animals. Thus I have examined a 13-year-old cow and two 11-year-old cows that had been grazing contaminated pastures for over nine years; they showed no clinical signs of either dental or skeletal fluorosis and yet all the younger cows grazing on the same pastures showed well-marked dental lesions.

If the rate of ingestion is higher, osteodystrophia develops in cattle and sheep of any age, while dental changes occur in the younger animals. Should the rate of ingestion of fluorine be still higher, osteomalacia develops and may be accompanied by more or less general symptoms.

Dental Changes.—The dental changes in ruminants have been studied extensively in various parts of the world. Our experiences in Scotland have been typical of the observations of workers elsewhere.

First of all, the temporary or deciduous teeth are not involved. In both lambs and young cattle, I have never found any sign of fluorosis in the temporary teeth, though all the older animals in the same grazing showed distinct evidence of the serious involvement of the permanent teeth. This observation conforms to the observations made by Philips, Hart & Bokstedt (1934), that they could detect no increase of fluorine in the milk of fluorine fed cows. They concluded that it is not easy to influence the fluorine content of milk.

By the time lambs are grazing, the formation of their permanent teeth has commenced; the formation of the permanent teeth in cattle occurs rather later and though they may be housed in the early months of their life, it is usual that they are grazing to a considerable extent by the time their permanent teeth are being formed.

It is noteworthy that if the grazing of young cattle is delayed for some months, the first permanent teeth to erupt escape damage. In both young cattle and sheep if the animals have been away from the contaminated pasture, this is reflected in the absence of lesions in the teeth formed during this time.

The dental lesions which I propose to show you* are:—

Incisor Teeth.—The classical effect on the incisor is the development of mottling of the enamel; this is almost characteristic of dental fluorosis. The wearing qualities of the teeth are poor and in some cases the friction of grazing wears the teeth away till they become so thin that the upper edge breaks off; in other cases the incisor teeth are worn down to round stumps, projecting very little above the level of the gums. Deformity and delayed eruption of the incisor teeth are frequently observed. (See Figs. 1 and 3).

Cheek Teeth.—Mottling of the enamel of the cheek teeth may occur, but the important defect is the poor wearing quality of the cheek teeth which leads to selective abrasion and deformity. (See Figs. 2 and 4).

* Presented to Lancashire Division, N.V.M.A., at Liverpool, January 31st, 1947.

* Lantern slides exhibited of which four form the figures (overleaf).

The process of selective abrasion sometimes exposes the pulp causing intense pain; this prevents the animal chewing and also provides another portal of entry for infection. Pain on drinking cold water is often noticed.

The entrance of infection leads to an alveolar periostitis and suppuration of the roots of the cheek teeth; this through the sinuses of the skull produces a chronic purulent nasal discharge. I have found when dissecting skulls that there was pronounced suppuration at the roots of all the cheek teeth in a high proportion of affected animals. It is possible to detect badly affected sheep by selecting those with a purulent nasal discharge.

The grinding action of feeding and ruminating causes the teeth to wear irregularly so that long projections are formed; these fit into a hollow in the opposite teeth. The long points impinge on the gum of the opposite jaw, causing ulceration and permitting the entrance of infection. In many cases the formation and eruption of the teeth is irregular, leading to deformity of the mouth, and this, with the irregular wear, produces a state of the teeth that renders it impossible for the animal to chew its food properly. A considerable quantity of food may be ingested, but this is not efficiently ground during the process of rumination and much of it is lost from the mouth during the animal's unsuccessful attempts to chew the cud.

Bone and Joint Changes.—Slagsvold (1934) writing on cases of fluorosis in the neighbourhood of Norwegian aluminium factories said that the gait of cattle and sheep became stiff and painful, the animals lay down a lot and were strikingly tender and stiff in back and limbs; bone fractures were common but it was doubtful if there was any thickening of bones.

I have only observed this stiff, painful gait in cattle grazing near to the aluminium factory. One farmer put 30 young cattle out to graze in the immediate proximity of the factory; in five weeks eight of these had developed a stiff, painful gait which appeared to affect principally the back and hind limbs. The cattle were removed to an upland grazing some two miles from the factory, and the stiffness and lameness slowly disappeared. Another farmer encounters the same type of lameness in his cows when they are in a rough grazing that runs to within half a mile of the factory. He finds that they take approximately a month to recover if removed from this grazing.

A peculiarity that I cannot explain is that a point of maximum intensity of pain in these lame cattle is encountered at the back of the heel, the animals showing intense resentment if this is pressed firmly. Lourens (1941) describing the cases he encountered in cows near a chemical manure plant mentions cachexia, lameness and finally inability to walk. Abnormal wear and abrasion of the teeth was most noticeable.

In the case of an eight-year-old cow that was showing marked dental lesions of fluorosis, there were eleven rib fractures and the ribs seemed unduly brittle, but no other bone lesions were observed; this cow was grazing about half a mile from the factory, but it would be housed for at least six months in the year. A sample of herbage from this grazing contained 61 p.p.m. of fluorine.

It seemed, on examining a flock of sheep in which 62 per cent. of the adult animals showed evidence of dental fluorosis, that there were an unusually high proportion of sheep with fractures of rib, pelvis and mandible. The ribs of some of these sheep were found to be very fragile and there was a definite osteomalacia in the skeleton of one sheep. These sheep were all grazing quite near to the factory, *i.e.*, within half to one mile. The fluorine content of the herbage on this farm was 44 parts per million.

Among dairy stock grazing at a distance of one and three-quarter miles from the factory, no lesions of bone were found, though dental lesions of fluorosis were widespread through the herd.

Velu (1933) referred to the development of osteosclerosis in naturally occurring cases and also referred to the peculiar chalky-white condition of the bones in such cases.

I understand Blakemore, Bosworth & Green observed stiffness and lameness in the incidents they have investigated. I gather that the concentration of fluorine on the herbage in their cases was very much higher than we observed in Scotland and it may be that the quantity of fluorine ingested in the Scottish cases was sufficient to cause dental fluorosis in the young adolescent animal but was only sufficient to cause changes in bone in those animals grazing near the factory.

Du Toit, Malan, Groenewald & De Kock (1932) described the artificial production of the characteristic swellings of the metacarpus and metatarsus that have been referred to by many writers on naturally occurring fluorosis. Such swellings have been a very minor feature of the cases I have encountered.

Relation of Clinical Signs to Rate of Ingestion.—When one comes to survey the history of the area involved in Scotland, one feels justified in putting forward the contention that contamination of the soil and herbage is a cumulative process and especially in the periphery of the area, a considerable time—possibly years—may elapse before a dangerous concentration is attained. Cumulation seems also to apply to the individual animals.

Du Toit, Smuts & Malan (1937) stated that "Under conditions of fluorine feeding, the system can retain appreciable amounts. In the bovine, the retention is as high as 0·2 gramme per day. It seems possible that at a certain limit, the tissues must almost become saturated with this element and unable to cope with a continual influx." Presumably it is under these conditions that the acute changes in the skeleton occur.

Pierce (1938) showed that in sheep, a daily ingestion of 60 mg. or more of fluorine caused changes in the teeth roughly proportional to the amount of fluorine ingested. The enamel of the incisors was pitted and the molars showed selective abrasion. It is interesting to note the co-relation between Pierce's observation and my own experiences. My colleagues, who have been working on the metabolism of sheep, tell me that on a conservative estimate, a Blackface ewe may consume 15 lb. of grass in a day. In the case of herbage containing 61 parts per million of fluorine on a dry matter basis, the sheep would require to consume 2·17 lb. of grass dry matter in 24 hours in order to ingest 60 mg. of fluorine; converted into crude herbage this amounts to 10·58 lb., a figure well within the estimated daily consumption of the sheep.

I have not observed any evidence of reduced fertility or impaired reproduction in the affected animals. The milk yield in both cows and ewes is low, but this is, I believe, directly related to the debility that results from imperfect chewing of the cud due to the dental abnormalities.

The death-rate amongst affected sheep is highest during the winter months, when in their debilitated state they are unable to withstand the rigours of our winter.

Diagnostic Methods:

All the cases I investigated in both cattle and sheep were presented with a complaint of progressive debility. The more usual causes of this debility—such as malnutrition, helminthiasis and chronic bacterial infections—were eliminated. The dental lesions were readily observed and it was realised that in ruminants they were an adequate explanation of the debility. Analyses of bone and teeth showed an abnormal fluorine content. Analyses of the herbage showed a high fluorine content. Historically, the stock in the area had been healthy until some time after the aluminium factory went into action.

I have not examined any samples of urine from sheep, for it is not an easy matter to collect urine from sheep. Urine samples from cows have been examined and these show an excessive fluorine content. An interesting observation was made on one cow removed from the area to Edinburgh; on the day of her removal, the urine contained 24 p.p.m. of fluorine; 47 days afterwards it contained 14 p.p.m. This observation suggests that elimination of fluorine is very slow. Dr. H. H. Green has suggested that anything over 10 p.p.m. can be taken as definitely indicative of a serious measure of fluorosis. In the case of dairy cows, examination of the urine provides a convenient biochemical method of checking the clinical diagnosis. Thanks to Dr. Green, who has been most helpful in this matter, a number of samples of bovine urine were examined for their fluorine content. These appear to give substantial biochemical support to the clinical findings of fluorosis.

Details of the biochemical findings are given in Tables I, II and III. (See opposite page).

Summary

When an area of land is contaminated with fluorine, we may expect to encounter one of two main forms of clinical fluorosis.

If the contamination is heavy, there will probably be signs of a generalized effect in the form of loss of appetite, stiffness, lameness and articular pain. Later, dental lesions will occur in the young, adolescent animals. Where the contamination is lighter, no ill-effects may occur in adult animals, but young animals grazing on contaminated pastures during the time of the formation of the permanent teeth, will show evidence of dental fluorosis.

No satisfactory antidotal treatment is available; the dental lesions are an irreversible process. Prevention of the condition must rest on the removal of the source of fluorine.

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FIG. 1.—Affected incisors, sheep, showing mottling and pitting.

FIG. 2.—Affected cheek teeth. Sheep.

FIG. 3.—Affected incisor teeth, four-year-old cow.

FIG. 4.—Affected cheek teeth, eight-year-old cow.

TABLE I

FLUORINE CONTENT OF TISSUES IN PARTS PER MILLION
SHEEP

Earlier Series:				
Affected.		*Teeth.*		*Mandible.*
1	...	3,900	...	7,000
2	...	5,000	...	—
3	...	3,500	...	5,100
4	...	6,100	...	4,200
Control				
1	...	1,500	...	1,900*
Later Series:				
Affected.		*Rib.*		*Mandible.*
1	...	12,000	...	14,100
2	...	10,400	...	17,200
3	...	7,000	...	9,420
4	...	8,660	...	2,140
Control				
1	...	478·0	...	415·0
2	...	83·0	...	111·0
3	...	382·0	...	238·0
4	...	343·0	...	269·0

* There is some doubt if this sheep was a genuine control; it was obtained from the same neighbourhood as the affected sheep, before it was realized how extensive the contaminated area was.

TABLE II

FLUORINE CONTENT OF TISSUES IN PARTS PER MILLION
CATTLE

Affected.	*Teeth.*	*Mandible.*	*Rib.*	*Rumen Contents.*
1	7,600	9,200	9,100	—
2	3,460	4,360	3,220	100·3
Control.				
1	58·0	52·2	94·4	4·2
2	64·5	70·1	114·2	7·9
3	94·4	130·7	92·2	2·5

URINE

Affected No. 1.—On removal from contaminated grazing half a mile from factory	24
47 days after removal	14
Affected No. 2.—On removal from contaminated grazing one and three-quarter miles from factory	13·6

TABLE III

URINE ANALYSIS

FLUORINE IN PARTS PER MILLION, FIGURES ADJUSTED TO SPECIFIC GRAVITY OF 1·030

Farm four and a half miles to north of factory.	
Cow No. 1	20
Cow No. 2	14
Croft two miles to north of factory.	
Cow No. 1	41
Holding two miles south of factory.	
Cow No. 1	19
Cow No. 2	24
Cow No. 3	23
Cow No. 4	27
Cow No. 5	28
Cow No. 6	20

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Discussion

Mr. ROBERTS (Runcorn) enquired if there was any method of controlling or avoiding the disease; was it possible to avoid the condition by removing animals during certain times of the year?

Mr. ADAMSON was disappointed that Dr. Green was unable to open the discussion. He was very interested in the paper and wished to know if fluorosis could occur in connection with any other manufacturing process other than aluminium.

Mr. BYTHELL had encountered fluorosis arising from enamel works in Staffordshire. He had noticed abnormal wear and rounded edges in temporary teeth. The animals had grazed intermittently on the pastures—10 or 12 days on, then off for a number of weeks. The cattle were in poor condition and had a low milk yield. He had found the urine test useful, 19 to 33 parts of flourine per million being present. He would like to ask Professor Boddie if the absence of lameness in his cases was due to the intermittent grazing and whether fluorine could account for the destruction of trees at 10 yards distance during a night or whether sulphuric acid—which is also discharged during the process of enamel manufacture—would be the cause. In conjunction with Dr. Green they had found a concentration of flourine of 776 parts per million 300 yards from the factory and at the furthest limit a concentration of 115 parts per million. Only two fields on this particular farm were contaminated, the non-contaminated fields being on the course of prevailing winds.

Mr. ARTHUR: After hearing Professor Boddie's address they now had a clear picture of this condition. He would like to ask if any blood analysis had been carried out.

Mr. A. J. WRIGHT thanked Professor Boddie for his paper and asked whether ploughing-up would obviate the trouble, also whether fluorine had any deleterious effect on root crops.

Capt. WOODHEAD asked whether foals were exempt from the disease.

Professor WRIGHT said the paper would stimulate interest, especially in dental pathology, because the disease was a dental hypoplasia.

Professor BODDIE answered each speaker after the latter had spoken. Amongst the answers given were the following:—

There were 28 manufacturing processes which resulted in fluorine being discharged, amongst them being a brickworks where the clay used contained fluorides.

No blood analyses had been carried out.

It took five to six weeks in a heavily contaminated pasture for lameness to be produced.

The bulk of the contamination was on the surface of herbage. Root crops were not sufficiently contaminated to be of serious consequence.

No horse breeding had taken place on the affected farms for a considerable number of years. There was evidence from Africa that the horse was not very susceptible.

Some Aspects of Animal Disease*

R. H. SMYTHE

NOTTINGHAM

The essayist first discredited the popular fallacy that disease was engendered by domestication or, conversely, that life under natural conditions was invariably associated with a state of health and well-being. Among animals living together in normal environment and circumstance and also among men existing under more or less primitive conditions, disease was rampant.

Factors predisposing to ill-health might then be (*a*) the gregarious instinct, which led to the formation of flocks, herds and colonies; (*b*) the carnivorous (or insectivorous) instinct, associated with the ingestion of infected creatures, their flesh or offal.

A balance must be established between multiplication of the species on the one hand and on the other, death from (*i*) disease; (*ii*) enemy action, as exemplified by the ravages inflicted by preying animals, in many cases including man. In the higher animals, modern civilization had added the mass annihilation of warfare as a remedy for overcrowding in their cities.

Death from disease was an essential factor in maintaining the existence of any species. Continuous health ensured a high fertility ratio added to long life. The result was over-population. The first of Nature's weapons against this condition was starvation. Nutritional deficiencies, which were insufficient to cause death, resulted in impaired fertility. Overcrowded, weakened animals were an easy prey for the stronger. A proportion of those individuals which escaped these dangers succumbed to diseases induced by propinquity. The majority of wild animals, including birds and insects, which lived in community, had adopted migration as an additional safeguard against death from over-population. This migration might include the whole or a portion of the colony; when the whole migrated it was to a more commodious area; more frequently a part moved to fresh fields, leaving the remainder in enjoyment of extra space. Whether disease, starvation, death or migration effected a restoration of the balance of population, the final result was the same—a return to health, which was maintained until such time as over-population was again manifest. Re-stocking was also controlled by climatic conditions which synchronized with the rise and fall in the supply of food. The same light rays which stimulated ovulation in the female and spermatogenesis in the male energized

* Extended abstract of paper presented to the Derbyshire Division, N.V.M.A., at the Midland Agricultural College, Sutton Bonington, June 27th, 1946.

the growth of the vegetable and animal life which would form food for the resulting progeny. In man, theoretically at least, the birth-rate was regulated by economic considerations. During periods characterized by great wastage of human life, psychological factors tended to raise it, but this feature had not been observed in animals of lower mentality when subjected to additional stress. In man, too, artificial aids to health were available; prophylactic methods lessened disease, parasitism was controlled and hygienic precautions, notably sanitation, ventilation and the use of individual vessels for eating and drinking, all provided safeguards denied to animals not subject to complete domestication. Wild animals were compelled to eat unsterilized food in infected surroundings, but against this they were better supplied with natural vitamins. Prepared foods, ground cereals and foods subjected to "improvement" by chemical means or heat processes not only lost food value and vitamin content but might even develop toxic properties. Such foods formed a considerable part of the diet of all animals in a state of domestication. The question also arose as to whether the ingestion of an unnatural diet might not alter the bacterial flora of the alimentary tract in such a way that the synthesization of vitamins within the body might be interfered with.

Certain carnivorous animals either left their "kill" to putrefy, meanwhile guarding it from other animals, or buried it in the ground for an indefinite period. It was possible that this instinctive action was calculated to lessen the risk of parasitic and certain bacterial infection. Although parasitism and infections in domesticated animals might be moderated according to the knowledge and energy of the owner, custom died hard. Poultry still fed from ground polluted by their own and fellows' faeces. Rabbits not only suffered faecal contamination but were fed with garden produce manured by the droppings of the tapeworm-infected house dog. Cattle still drank from the communal pond; horses and sheep followed horses and sheep on worm-infested pastures. The village bull still flourished, aborting cows still graced the markets. Some of these happenings were preventable, others were not, but a great deal could be done by education of one's clients. Nobody outside our own profession was qualified to impart such instruction and at the best one was able only to influence the small minority with sufficient wit to listen and sufficient enterprise to put the teaching into practice. We heard a great deal about the losses arising from certain animal diseases but very little about the far greater losses resulting from ignorance and bad management. Fortunately, in a state of nature, free from human interference, the weakly went first. From mankind, we selected at intervals our fittest and best for slaughter and retained the unfit to replenish our stock. It was fortunate for our animals that we exercised more consideration for their welfare than we did for our own.

Tuberculosis

Discussing certain diseases in domesticated animals, the essayist first mentioned tuberculosis.

Had the incidence of bovine tuberculosis increased of late years? We could derive little help from statistics because until recent years a reliable tuberculin had not been introduced. Observations regarding the frequency of the disease in the past could only be based on clinical reports and recollections and now that tuberculin had come into universal use we were apt to become tubercle-conscious. One even hesitated before advising a proud owner of a herd to initiate a test when actually one should encourage him. It was possible that tuberculin had done more to disseminate tuberculosis throughout the country than any other single factor, through the widespread dissemination of reactors.

The essayist touched on and invited discussion concerning universal testing, branding of reactors, the establishment of free areas and other methods of control. He deprecated the sale of tested cattle from dealers' yards where animals had been in contact with all and sundry for varying periods. He paid a tribute to the West Country farmers who were sensible enough to concentrate on grass production and who knew the superior value of banks over hedges for shelter. The more grass available, the shorter the housing period and the better the health of the milking stock. Modern tubular steel was no safeguard against infection and one house with a roof and walls was a great deal like another. Two of the matters that required a great deal of care were the drinking supply and the question of isolation. The frequency of primary pharyngeal tubercle laid suspicion upon the communal drinking trough. Isolation of young stock on any mixed farm was practically hopeless and the question of establishing special communal farms to be devoted to this purpose was discussed.

Regarding the comparative tuberculin test, the essayist pointed out that avian as well as non-specific infection had now taken on a new importance. A very considerable proportion of all wild birds living in flocks were infected and the incidence of infection by avian tuberculosis was related to the proximity of cattle and roosting places. In commercial herds, particularly, one had to consider how long affected cows had been in any particular herd and their past history before a preponderating avian reaction in such animals could be regarded as establishing the presence of avian infection in a herd in general. Only the man who carried out the test could accurately judge the value of such reactions and no true interpretation could be made solely from figures alone by any other person. Dual infection was a distinct possibility. A superimposed avian infection occurring in animals soon after introduction to a herd, particularly if in those animals a bovine type already existed, might produce some interesting measurements. It would be necessary to ascertain, by *post-mortem* examination, the freedom from tuberculosis of a large number of animals which had PASSED the comparative test before one could vouch for its reliability.

Mastitis

Modern housing and management did not help in the campaign against mastitis. Clean milk and bovine happiness were not always compatible. Because a floor looked clean, it was not necessarily comfortable to lie on; it might also be hard, wet, slippery and furnished with inconvenient angles. Modern short standings with squared channels, the edges of which compressed the hind quarters during resting hours, contributed more to the development of mastitis than dry, dirty floors, bedded with straw. Traumatism was one of the predisposing factors. Continuous wetting of teats and udder with cold, contaminated cloths did little to help.

Since the essayist had classified each case of mastitis met with, he had been struck by the comparative infrequency of *S. agalactiae* infection and the frequency of subacute and chronic staphylococcal and mixed infections. In neighbouring practices, the reverse had been observed, so it was probable that the incidence of streptococcal mastitis varied considerably within a short radius. Standardized treatments were not more satisfactory on this account and in spite of all that had been written on modern advances in therapeutics, our success in dealing with this combination of diseases was not yet a cause for congratulation. Apart from a limited number of streptococcal types, treatment of all other udder infections was confined to attempts to preserve life with no hope of saving the quarters affected.

The modern tendency to step-up production by artificial insemination might perhaps succeed in producing a few physiological freaks. A benign Providence would undoubtedly take care that they were sterile. It seemed that the only hope for the bovine species was the discovery and marketing of synthetic milk.

Infertility

It was gradually being recognized that bovine infertility was largely physiological in origin and whilst we might ask a cow to produce sufficient milk to satisfy the needs of a street of houses, in place of those of a single calf, we need expect little help from nature. It was however, still our unfortunate lot to be called upon to assist breeders in carrying out their nefarious designs.

The chief obstacles to fertility in the female appeared to be: (i) Anoestrus or suboestrus; (ii) Failure to ovulate—the ovum being in many cases retained in a luteal cyst; (iii) Delayed ovulation—ovulation occurring after the period of desire had passed: (iv) Early death of the fertilized ovum.

The possible causes were legion, but most of these conditions depended upon faulty co-ordination between the ductless glands and mis-timing of the physiological processes stimulated by hormone production. The secretion of hormones depended for its ultimate efficacy upon hereditary influence, general health, a normal physiological demand, psychological conditions, environment, nutrition and the balance of vitamins and mineral salts within the body.

It was probable that the natural synthesis of essential vitamins and their absorption were hampered when unaccustomed foods composed the bulk of the alimentary content and when the normal bacteria of the tract were exchanged for others more adapted to the changed environment. It was also likely that the synthesis of vitamins was interfered with when intense abnormal psychological and physiological strains were imposed upon the animal. Such vitamins were essential in maintaining immunity against infections from without as well as against those always, or already, present within the tissues. Heavy dosages with sulphonamides had been stated by American observers to destroy valuable organisms in the alimentary canal which produced many of the B-complex vitamins. The essayist had found that the administration of nicotinamide in debilitated cattle and dogs following sulphonamide therapy resulted in increased metabolism with rapid gain in weight.

Canine Diseases

During the past two years we had been faced with an almost overwhelming epidemic of an enteric nature commencing with nervous complications or associated with them at an early stage of the illness. Were we dealing with a new strain of distemper virus or was this a fresh disease? One wondered sometimes if the origin of the infection might not have been associated with the importation of greyhounds.

Previous immunization against distemper virus appeared to help but little and even aged dogs, presumably immune to normal infection, went down with the disease. No treatment appeared to influence its course, but any successful attempt to check the persistent diarrhoea seemed to accentuate the severity of the nervous complications.

Before concluding, the essayist mentioned the treatment of certain canine neoplasms by the administration of oestrogens. He referred particularly to growths affecting the prostate, the mammary glands and the peri-anal tissues. Many cases of chronic eczema, in both sexes, were dependent upon structural and secretory changes in the gonads, associated with age.

He regarded the anal glands in the dog as accessory sexual appendages, their purpose being to afford indication of sex. When testicular activity degenerated in the senile male, either as the result of cell changes or the existence of a seminoma, the secretions of the peri-anal glandular tissue became altered in composition. The result was that the male became attractive to other males, in many cases. Cell growth was stimulated, with the production of an adenoma. Quite recently it had been discovered that the administration of a female oestrogen or of synthetic stilboestrol by mouth, injection or inunction would cause re-absorption of the new tissues. This also applied to prostatic hyperplasiae and to a lesser extent to certain types of mammary tumours, notably cystic adenomata. The interest lay in the fact that certain neoplasms could be removed by the administration of a synthetic preparation and it might reasonably be hoped that further research might provide chemical substances of value in the relief of other types of neoplasm.

CLINICAL COMMUNICATION

Mixed Infection of Glanders and Epizootic Lymphangitis in a Horse

I. FUNDAMINSKY, M.R.C.V.S.

Government Veterinary Service, Tel Aviv, Palestine

Subject.—A nine-year-old, bay, country-bred, cart horse, stallion.

History.—The animal was produced on 11.10.46 for examination on the advice of a private practitioner who suspected epizootic lymphangitis. Very little reliable information, as to the past history, was furnished by the owner. It was ascertained, however, that the horse had suffered from "swollen legs" two or three months previously and that more recently a swelling appeared under the throat which was observed to subside after the animal had blown forcibly through its nose, expelling in the nasal discharge floccules resembling white of egg.

Examination.—The general condition of the horse was fairly good. There were nodules and ulcers linked by "cords," inside the forearms and on the near side of the neck. Several small nodules were also present around the nostrils. Scars of firing lines could be detected around the lesions on the neck. There was a slight serous nasal discharge, congestion of the conjunctivae, a moderate soft swelling at the submaxillary space, and a temperature of 37·8° C. The nasal cavities were not inspected thoroughly because of a fear that the horse might blow discharge on to the face of the examiner, and of the danger in case it was infected with glanders. A cursory examination revealed what appeared to be ulceration of the septum nasi.

A suspicious reaction was obtained to the intra-dermo-palpebral mallein test. On retesting a few days later there was a positive reaction and the horse was destroyed.

Post-mortem Examination.—On *post-mortem* examination it was found that there was extensive ulceration of the mucous membrane of the nasal chamber. An unruptured nodule inside the forearm was incised and the enclosed pus was semi-liquid, greyish and tinged with blood, in contradistinction to the thick whitish pus commonly seen in lesions of pure epizootic lymphangitis. Numerous *Cryptococcus farciminosus* and also scanty organisms morphologically resembling *Pfeifferella mallei* were found in the pus smears sent to the Government Veterinary Laboratory.

THE VETERINARY RECORD

June 21st, 1947

THE NATIONAL INTEREST

IT has been made very clear that the attitude of the Council of the N.V.M.A. on the question of the terms of service of professional members of the staff of the Ministry of Agriculture's Health Division has the support of the rank and file of veterinarians throughout the country.

The fact is not surprising. After all, these men take a proper pride in their profession. They know all that has been done over the past century to raise the standard of professional attainments which the veterinary graduate must possess. They wholeheartedly support the policy of so equipping the Veterinary College and Research Centres as to ensure the progressive advancement of professional attainments.

Already the course of training which the would-be veterinary graduate must undergo is long and expensive. The educational and technical standards of the present-day veterinarian are as high relatively as those required by any other professional man. Knowing that, veterinary medical men everywhere resent the slur upon them which is implicit in the status assigned to their profession in the Civil Service.

In these columns, we have endeavoured to present every fact and figure having a bearing upon the Association's disagreement with the Minister of Agriculture. We have kept nothing back. We decline to accept the *ipse dixit* of the Minister that current terms of service are reasonable and adequate, because it has been proved to demonstration that these terms utterly fail to offer to highly trained men a reasonable return over 30 or 40 years spent in the service of the State on their expenditure of money, time and brain to fit themselves for their task.

It is essential, however, to bear in mind that in stating the case against the Minister's edict, the N.V.M.A. is not concerned primarily to defend and promote the interests of the veterinary men affected, individually or collectively. The Association's concern is for the National interest.

During the past four or five years all sections of agriculturists have combined to stress the importance of a healthy and progressive livestock industry as a prime factor in maintaining the prosperity of agriculture under post-war conditions. During the same years, leaders of urban industries have publicly recognized the importance which they attach to agricultural well-being from the standpoint of the economic stability which will result if a prosperous countryside continues to provide an enormously valuable market for the products of urban factories and workshops.

That unity of thought as between town and country is generally deemed to have provided the groundwork for the Agriculture Bill by Mr. Tom Williams to lay down the basis of post-war agricultural policy. If, then, the health and prosperity of the livestock industry are to furnish the key to the future of British agriculture and if that conception has the backing of town and country and of all shades of political opinion, it is starkly plain that the Minister's attitude towards the manning of his Animal Health Division may well deal a

mortal blow at the policy which he himself has sponsored.

Plans are well advanced for furthering the well-being of British livestock. The reports of the Loveday Committee have shown what remains to be done if the heavy annual losses accruing from animal diseases are to be eliminated. The organization of resources to secure the expansion of research and educational activities is being tackled energetically. If all these efforts are to succeed, first-class leadership in the Ministry's Animal Health Division is an absolute necessity. Ten years ago the Ministry admitted that the Division was not attracting the right type of professional recruit because the conditions of service were wrong. The position in that respect remains unaltered to-day.

We appeal to the Minister, in the National interest, not to sabotage his own agricultural policy.

NEW COLONIAL OFFICE LIST

The new Colonial Office list (publication was suspended during the war years) is an invaluable book of reference which provides an immense quantity of historical and statistical information gathered from official records and after consultation with representatives of Colonial Governments. The story of the Colonies, excepting North Borneo, Sarawak and Malaya, is strikingly told. Divided into three parts, the first gives the history of the office of Secretary of State for the Colonies, a list of former holders of the office and useful information about 47 institutions and associations connected with the Colonies. These include the Crown Agents, Imperial Institute, West India Committee and the Royal Empire Society.

Part two tells how the Colonial Empire has grown and of the formation and functions of the Central African Council, Caribbean Commission, East African Governors' Conference, West African Council and the Comptroller for Development and Welfare in the West Indies. Then follows a wealth of detail about the Colonies—climate, population, figures, industry, religion, communications, medical and educational facilities, geography, the administration as carried out by the British, names of past and present Governors, executive councils, foreign consuls, and constitutional details.

Information relating to the public services, names of staff at the Colonial Office and of the Colonial Governments abroad fill the third and final part of this extremely useful volume which is published as Colonial No. 205 by His Majesty's Stationery Office, price 10s. 6d.

* * * * *

RABIES IN IMPORTED DOG

The Ministry of Agriculture and Fisheries reports the occurrence of a further case of rabies in an imported dog while in isolation in approved quarantine kennels in the South of England. The dog, a Great Dane, nearly three years old, was acquired as a puppy by a Polish officer who brought it to this country from Italy. On arrival at the kennels, the dog appeared to be in good health.

On May 22nd the dog was off its food and growled at its attendant when he tried to induce it to drink. Slight symptoms suggestive of rabies were observed. These became more marked on the following day and the animal died about 2 p.m. on May 24th. A *post-mortem* examination was carried out at the Ministry's Veterinary Laboratory, Weybridge, Surrey, as a result of which it was confirmed that the animal was affected with rabies.

To the foregoing announcement the Ministry of Agriculture adds: "This is the third case since November, 1946, of rabies in an imported dog while in isolation in quarantine kennels. The incalculable harm to other animals and the risk to humans for which any one of these dogs might have been responsible had it been at liberty at the time when it developed the disease needs no emphasis. Although the three dogs represent a very small percentage of the imported dogs which are quarantined in the course of the year, their deaths from rabies serve to underline the imperative need for the stringent restrictions which are imposed on every dog brought to this country from outside the British Isles."

NEW INSTRUMENTS AND APPLIANCES

The German Vaginal Clam

SIDNEY S. NYE, M.R.C.V.S.
ROMFORD

The above appliance was demonstrated to me by a German prisoner of war after I had tried for ten days to prevent a recently calved cow from continually prolapsing its vagina. It worked so successfully that it resulted in an immediate drop in my prestige but gave me in return a valuable perquisite.

I find it very beneficial for pre-calving vaginal prolapse where clams, trusses, epidural, chlorodyne, etc., have their well-known disadvantages.

The principle of the appliance is the prevention of the eight folds of tissue being passed through the narrow gap of the clam at the beginning of the prolapse when the greatest bulge occurs (Fig. 2). It is essential, however, to have the clam wide enough to allow the vulva itself to be slightly everted. In this way it acts as an efficient, comfortable, mechanical block.

The appliance consists of horse shoe iron (or similar), covered with cotton wool and bandage, with three rings; it rests comfortably against the peri-vulvar skin and is held in position by a simple truss.

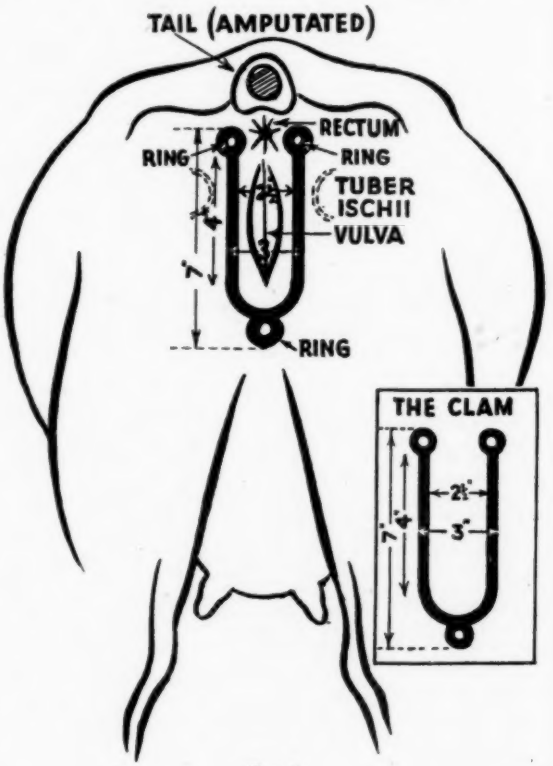

FIG. 1
THE CLAM

With the title "Unending Combat," Evans Medical Supplies, Ltd., have published a graphic and lavishly illustrated record of their activities in the production and world-wide distribution of fine chemicals and biologicals, with special reference to Speke, a model, self-contained development area on the outskirts of Liverpool which is now the headquarters of the Evans organization, and to the Evans Biological Institute at Runcorn, Cheshire.

As the paper for this brochure was specially allocated for overseas use, the firm cannot undertake the general issue of copies here, but all their representatives will be glad to show copies to veterinary surgeons.

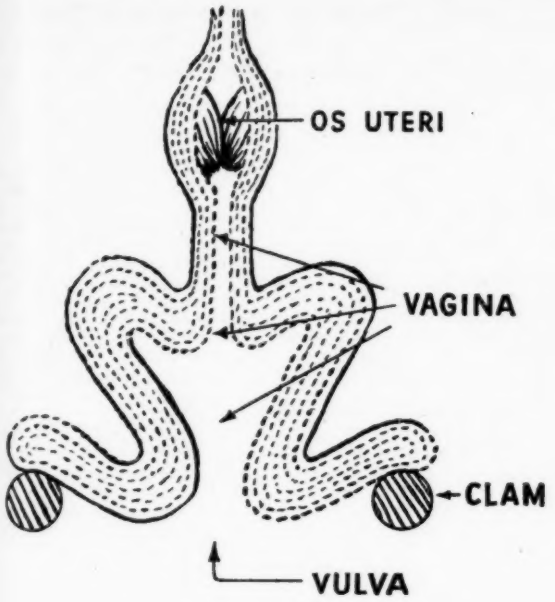

Fig. 2
Cow Straining

ABSTRACTS

[Factors Influencing the Distribution of Arsenic over the Fleece of Sheep after Immersion in Arsenical Solutions. Hill, J. L. (1946.) *J. Coun. Sci. and Indus. Res.* **19**. 245-250.]

From a series of experiments carried out under normal Australian dipping conditions it was found that the presence of surface active compounds, such as suint or a wetting agent, in the dip bath did not affect the amount of arsenic retained on the fleece of Merino sheep after immersion in arsenical solutions and therefore did not lower the immediate or possible residual efficiency of arsenical preparations. This is contrary to Hobson's findings (*Ann. Appl. Biol.* **28**. 261) with Welsh mountain sheep amongst which it was shown that, although the penetrating properties of the dip-fluid were increased by the presence of wetting agents or suint, drainage was also facilitated and thus the amount of arsenic retained in the fleece became progressively less as dipping proceeded. Hill's experiments also showed how irregular was the distribution of soluble arsenic in the fleece but provided no explanation of the irregularity. The region along the mid-line of the back tended to retain more arsenic than the lateral and ventral regions. The staple length influenced the amount of arsenic retained whereas wool density and the quantities of wax or suint on the wool did not seem to affect the amount of residual arsenic.

J. N. O.

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[The Percutaneous Absorption of Arsenic by Sheep Dipped in Arsenical Solutions. Hill, J. L. (1946.) *J. Coun. Sci. and Indus. Res.* **19**. 251-255.]

When three adult Merinos and three adult Border Leicesters, weighing 68 to 87 lb. and shorn 60 to 65 days previously, were subjected to normal dipping by immersion for 30 seconds in a 0·20 per cent. sodium arsenite solution they were found to have absorbed without ill-effect between 63 and 88 mg. of arsenic (as As_2O_3). Although it has been assumed that absorption from abraded or injured surfaces was much greater than from normal skin and that the dipping of shear-wounded sheep would therefore be more liable to cause death from arsenical poisoning, Hill found that the death of a severely wounded twelve-months-old weaner, immersed for one minute in sodium arsenite solution of similar strength, could not be attributed to arsenic poisoning *per se*. He suggests, however, that the inflammatory effect of the arsenic in the fluid upon a penetrating wound in the left axilla of this sheep, with consequent bacterial infection, was probably a contributory cause of death. In another experiment four sheep were immersed without ill-effect for 30 seconds in a 1·06 per cent. sodium arsenite solution and the distribution of arsenic in their viscera and alimentary canals determined by analysis. Appreciable amounts of arsenic were recovered from the contents of the rumen after dipping and the source of this arsenic was found to be the saliva which contained up to 30 times as much arsenic as the blood. As Hill points out, the finding of arsenic in the rumen and elsewhere in the alimentary tract after dipping does not necessarily mean that the animal has swallowed some of the dip fluid because appreciable quantities of arsenic are secreted in the saliva and this fact must be considered when investigating deaths alleged to be due to arsenical poisoning after dipping.

J. N. O.

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[Recovery of Viable Anthrax Spores from Vapours of Heated Anthrax Spore Suspensions and from the Distillate from Anthrax Spore Suspensions. Stein, C. D., & Rogers, H. (1946.) *Amer. J. vet. Res.* **7**. 481-485.]

Observations on the vapours from suspensions of spores of *B. anthracis* and *B. cereus* showed the presence of viable spores in the vapours when the suspensions were heated to 91° C. for 40 to 60 seconds. Viable spores were not present in such vapours when the suspensions had been boiled for three to five minutes. The distillate from similar suspensions was also shown to contain viable organisms, brought by the vapour coming over early in the process of distillation. The authors draw attention to the dangers of boiling sporulating organisms in open containers and to the fact that distillates may not be sterile.

A. W. G.

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REVIEW

["Animals Were There": A Record of the Work of the R.S.P.C.A. from 1939-45. By Arthur W. Moss & Elizabeth Kirby. Published by Hutchinson & Co., London. Price 6s.]

Being, as described in the sub-title, a record of the work of the R.S.P.C.A. during the recent war years, this little book confines itself almost exclusively to the functions of that Society and to relating incidents in which the personnel of the Society were concerned; there is a short chapter acknowledging the magnificent part played in the rescue of animals by the Civil Defence Services; tribute is paid to the R.A.V.C. for the care given to war dogs and to "the courage and persistence that was so widely shown by our veterinary surgeons throughout the war," and acknowledgment is made for gifts of money from overseas societies. It lays stress on appreciation of the gallant services of inspectors and clinic workers of the Society.

The photograph of "The Life Savers" will bring a smile to the lips of many veterinary surgeons noticing the pendant stethoscope dangling from the neck of the "successful operator." Perhaps it is so placed in the picture to distinguish the operator from the assistants!

One cannot always interpret correctly the thoughts and intentions of an animal from its actions: coincidence and the subconscious instinct for self-preservation may be the sole factors in a course of action which, to the over-indulgent animal lover, appears to be the result of wise thought and careful planning. To imply that a mortally wounded cow which "presented herself at the accustomed place near the milking shed and patiently waited her turn" did so in a "spirit of humble surrender in the face of death" is somewhat melodramatic. The cow had, no doubt, acquired the habit of obtaining the benefit of physiological relief at a certain time and place. Her arrival for this purpose is not a "humble surrender."

It is well for us to be reminded that active participation in warfare was carried out by mules, camels and elephants in addition to horses, dogs and pigeons.

The second half of the book presents very interesting and historical records of the work of war dogs and carrier pigeons, and of the horses of the Cossacks in Russia which received from the R.S.P.C.A. very great help in the form of generous veterinary supplies for use by the Russian Army Veterinary Service.

The great part played by the R.S.P.C.A. in the recruitment of our war dogs is explained. Readers will be surprised to learn that many dogs arrived here from Dunkirk, and the R.S.P.C.A. did

(*Concluded at foot of Col.* 1, *p.* 308)

Victoria Veterinary Benevolent Fund

MEETING OF COUNCIL

A meeting of the Council of the Fund was held at No. 10, Red Lion Square, London, W.C.1, on Wednesday, May 7th, 1947, with the President, Mr. Arnold Spicer, in the chair.

There were also present: Major J. J. Dunlop, Mrs. D. I. Glover (representing the Ladies' Guild), Mrs. R. C. G. Hancock (President of the Ladies' Guild), Lt.-Col. G. B. Rees-Mogg, Lt.-Col. P. J. Simpson and Professor G. H. Wooldridge. Mr. C. W. Francis, Accountant, was in attendance.

The minutes of the previous meeting held on February 12th, 1947, having been published, were taken as read and signed as correct.

Letters of inability to attend were received from Professor J. B. Buxton, Messrs. H. W. Dawes, G. N. Gould, G. P. Male, J. W. Procter and H. W. Steele-Bodger.

Correspondence.—A letter from the Officers' Association regarding a member of the profession was read together with the Secretary's reply, which was approved.

A letter from the president of the N.V.M.A. regarding the return to the Association of the unexpended portion of the £1,000 donated by the Association to the Victoria Veterinary Benevolent Fund for the relief of war damage sustained by veterinary surgeons was read.

The Hon. Secretary explained that there had only been two calls on this Fund and that the sum of £200 had been expended. He pointed out, further, that the expenditure of this money was to be arranged in consultation with the National Veterinary Benevolent and Mutual Defence Society. He had already communicated with that Society and was awaiting their decision.

It was decided that (i) upon receipt of an official request from the National Veterinary Medical Association for repayment, and (ii) that the N.V.B. & M.D. Society concur, the balance of £800 be returned.

Accountant's Report

The Accountant presented the following report:—

Since the previous meeting of Council, the following Donations and Subscriptions by Covenant have been received:—

Collecting Boxes:	£ s. d.	*Donations.* £ s. d.
C. G. Allen	1 12 6	
Central Veterinary Society	3 3 4	
Eastern Counties Veterinary Society	2 12 0	
Miscellaneous	3 5	
Northern Ireland V.M.A.	7 18 0	
Scottish Metropolitan Division ...	2 2 4	
Scottish Branch, N.V.M.A.	3 6 0	
Withers & Powley	14 0	
South Wales Division (1946)	7 2 6	
		28 14 1
Burroughs, Wellcome & Co.		1 1 0
Eastern Counties Veterinary Society		10 0 0
Dr. M. Feely (per Burroughs, Wellcome & Co.) ...		1 1 0
Isle of Wight Canine Association		5 5 0
W. Hay		1 1 0
National Greyhound Racing Club		5 0 0
C. Peirce (non-member)		1 1 0
Scottish Metropolitan Division		10 0 0
J. S. Stevenson		1 1 0
		£64 4 1

Annual Subscriptions by Deed of Covenant

Six further Covenants have been received:—

	£ s. d.
1 new subscriber for	2 2 0
2 new subscribers for	1 1 0
1 existing subscriber for	1 1 0
1 new subscriber for	10 6
1 existing subscriber for	10 6

Report on Cases

258. This case has now been taken over by the N.V.B. & M.D. Society.

85. Owing to changed circumstances, the grant to this person has been stopped.

142. As this person is now receiving a pension she has intimated that she does not consider she should continue to draw on the Fund and therefore at her request the grant has been stopped.

23. The Secretary reported that by direction of the Council at its last meeting, this recipient was notified that her grant was being stopped. No reply to this letter has been received.

255. The Secretary reported that the last cheque sent by the Bank to this person had been returned through the dead letter office with the word "Deceased" written on the envelope. Enquiries to confirm the death were being made locally.

Second Distribution of the Money Given by the Bexhill Horse Show per A. W. Whicher, Esq.—The Secretary reported that the second allocation of this money was made at the end of April and presented the list of the recipients with the amount paid to each. Letters of appreciation from the recipients were also submitted.

The action of the Secretary was approved.

Application for Loan by an M.R.C.V.S.—The Secretary explained the purpose for which this loan was required and read the letter he had written to the applicant, on the instructions of the Executive Committee, pointing out that it was not possible to accede to his request under the Memorandum and Articles of Association.

The action of the Executive Committee was endorsed and approved.

Annual Report

The draft Annual Report was presented and discussed and with the correction of a few printers' errors and the substitution of the name of Professor J. McCunn, M.R.C.S., L.R.C.P., M.R.C.V.S., in place of Mr. J. W. McIntosh (deceased) as representing the Central Veterinary Society on the Council, intimation of which had just been received, it was approved for circulation to the members of the Fund.

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very valuable work in taking charge of them and ensuring their quarantine or destruction.

The Epilogue calls for increased effort on behalf of animals, and states that arrangements have been made, with the full co-operation of the veterinary profession, to give lectures to young people and conduct examinations in animal first-aid. The paper shortage, recent power cuts for fuel economy and other difficulties in the printing trade have seriously delayed the start of this, but the plans are prepared and should soon be put into action.

There are many excellent photographs, a few well-chosen war cartoons are reproduced and the general production of the book is remarkably good.

IN PARLIAMENT

The Penicillin (Control) Bill

In the House of Commons on June 9th, the Minister of Health (Mr. Aneurin Bevan) moved the Second Reading of the Penicillin Bill, from the Lords. The Government, he said, were not anxious to control a beneficent substance of this kind if it were not essential to do so, but the unanimous view of eminent authorities consulted was that there would be grave dangers to public health if this substance were unrestricted in sale and consumption. These conclusions were based upon the knowledge that this substance, among others, if consumed over a long period of time in small quantities, established in the organism a resistance to its beneficent effects.

Thus it seemed to the Government to be highly undesirable that penicillin should be the plaything of quacks with all sorts of ways of selling it and advertising it.

Therefore, it was decided that they should have a short Bill which would empower the Ministry of Health to control its sale and distribution. However, they were concerned only about controlling the sale of the drug to the individual consumer. They were not concerned at all about influencing its wholesale distribution.

The Bill laid it down that penicillin could be given only on the certificate of a qualified medical practitioner or veterinary surgeon, or, on his certificate, by a chemist. That, in the Government's view, was all the restriction which was required. They also took power in the Bill to deal with other drugs that might, later on, be found necessary and to which the same definition would apply, *e.g.*, streptomycin. In some instances the giving of this drug had caused definite harm, whereas in other instances it was still claimed that it had a healing effect, but that had not yet been established. There were other investigations of an analogous kind going on which, if they proved successful, would transform the whole field, but they were anxious that when these products came along they should at the same time have in their possession power to enable them to prevent their thoughtless consumption and their commercial exploitation in a manner injurious to the public. Therefore, the Bill took power to control those by regulation after they had received the advice of the Medical Research Council about them.

The Bill had been discussed in another place and since then a number of suggestions had been made about Amendments.

When the Bill went into Committee, he was prepared to move a number of Amendments dealing with some of the criticisms which had been made—many of them had points of substance.

Sir J. Mellor: Knowledge in regard to penicillin and its effect was in its infancy. It was quite impossible at present to know how far it was necessary to control the use of penicillin: for that reason he was proposing to move an Amendment in Committee to limit the operation of this Bill to five years so that Parliament, towards the end of that time, could have another look at it in the light of the medical knowledge which might have been obtained.

Dr. Haden Guest: As the Minister had said, we might have the situation where people were treated so much by penicillin that, in a short time, the people concerned were no longer able to be helped. It was because of the existence of this peculiar quality that penicillin must be safeguarded by this method of control in its administration to the individual.

Mr. Linstead welcomed the Bill: he thought the Minister had proved his case, but he was very glad that he indicated that he hoped in Committee to move a few Amendments that would not only make the Bill more acceptable, but also more workable. One or two of these points had occurred to him in studying the Bill, and he would rapidly draw attention to them.

Having made out a case for the close control of penicillin, it had occurred to a number of people who had studied the Bill that most of the control seemed to be given away by the exceptions in Clause 1 (2), and, in another place, there was evidently considerable misapprehension as to the effect of these exceptions. He hoped the Minister would see whether he could not make clear, to those who wanted to know what the law was, exactly the effect of the limitation upon these exceptions.

Then he would draw attention to Clause 2, where the Minister took the power to control additional substances. As Clause 2 was now drafted, these substances must be produced by living organisms, and it was more than likely that research laboratories might find that this substance might be produced by chemical action. It would be desirable to look at that definition again. The only other point to which he wished to draw attention was the lack of any specific power of enforcement. He would like the Minister to consider whether the inspectors appointed under the Pharmacy and Poisons Acts might not be used for the purpose, in the course of their other duties, of securing that the provisions of this Act were, in fact, observed.

Mr. Christopher Shawcross: The only defect of the Bill was that it did not go far enough. He hoped that the definition of "other substances" might be enlarged so that when it came to the Committee stage more restrictions would be inserted than were in it as at present drafted, on the patent medicine industry.

The Debate was adjourned.

The adjourned debate occupied a few minutes only before the Bill was "read a Second time" and committed to a committee of the whole House.

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Questions

Fowl Pest

Lord Willoughby de Eresby asked the Minister of Agriculture the latest figures as regards the number of cases of fowl pest which have been notified, and the number of fowls which have been slaughtered.

Mr. T. Williams: Up to and including June 4th there have been 359 outbreaks of fowl pest in England and Wales, involving the slaughter of about 17,200 birds.

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Water Supply Schemes

Mr. Amory asked the Minister of Agriculture whether he is aware of the slow progress being made in carrying out agricultural and domestic water supply schemes; and what steps are being taken to secure bigger delivery of pipes for these purposes.

Mr. T. Williams: The hon. Member will appreciate that the progress of many desirable developments in agriculture, as in other fields, is affected by the over-all shortage of steel. It is hoped that supplies of pipes for farm water schemes will improve as soon as production of steel increases and it is possible to increase allocations.

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Lister Institute of Preventive Medicine

Mr. Viant asked the Minister of Health whether it is intended that the Lister Institute of Preventive Medicine shall be controlled by his Department when the National Medical Service Act comes into operation; and what is the present relationship between the Lister Institute of Preventive Medicine and his Department.

Mr. Bevan: The Lister Institute is a non-profit-making institute which, like other manufacturers of therapeutic substances, holds licences from the Minister of Health under the Therapeutic Substances Act, to manufacture certain substances to which the Act applies, and by special arrangement provides for the Minister supplies of lymph required for public vaccination against smallpox. The National Health Service Act will not affect the relation of the Institute to the Ministry.

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Slaughter Houses (Horses)

Sir R. Glyn asked the Minister of Health under whose authority are slaughterhouses licensed where horses and ponies are slaughtered for human consumption and the licence of the local authority for a knacker's yard does not cover permission for these animals to be destroyed for this purpose; and what Department is responsible for supervision and ensuring that proper legal obligations for humane slaughter are enforced.

Mr. Bevan: Horses or ponies whose meat is sold for human consumption are slaughtered in slaughterhouses licensed by local authorities who also have sole responsibility for enforcing the legal obligations for humane slaughter.

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Vivisection (Registered Places, Inspection)

Mr. Peter Freeman asked the Secretary of State for the Home Department whether any independent inspection of vivisectional laboratories is made at any time by other persons than officially-appointed inspectors, or if he will provide for facilities to be made for other persons as well.

Mr. Ede: As I told my hon. Friend in reply to his Question of February 28th, 1946, I have no power to require laboratory authorities to admit persons other than inspectors appointed under the Act of 1876.

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Cattle (Rail Transit)

Mr. Peter Freeman asked the Minister of Food whether he is aware that 30 head of cattle, carried in three trucks, recently spent 37 hours on a railway journey from Fakenham, Norfolk, to Aldershot; that this journey took much longer than it should have done; that on arrival at Aldershot one beast was found to be dead and all showed a great degree of fatigue and distress; that due to the filthy state of the trucks the battens fitted to prevent the animals slipping were ineffective; that there is no evidence that the animals were fed and watered during the journey; and whether, to avoid such cruelty to cattle in the future, he will arrange to slaughter the animals at the markets and distribute the carcases.

Dr. Summerskill: I presume that the Question relates to 30 cattle despatched from Fakenham to Aldershot on May 8th. These were watered and received attention at Feltham, and there is no evidence to show that the trucks used were not in the usual clean condition when the animals were loaded. The time spent in transit was too long, and my right hon. Friend the Minister of Transport is examining, with the Railway Executive Committee, what steps can be taken to avoid a recurrence.

I am afraid that the suggestion that animals should be slaughtered at the market, and the meat distributed in carcase form, is impracticable.

Mr. Freeman: Is my hon. Friend aware that in one of the other trucks some cattle were lying on the floor, and were trampled on by others, causing considerable cruelty? This is not an isolated instance. Would she instruct the police to take more effective action, and ask the railway companies to take steps to prevent incidents like this?

Dr. Summerskill: This is a matter for the railway companies; we are awaiting their report.

Dr. W. R. Wooldridge, Scientific Director, and Sir Cleveland Fyfe, Organizing Secretary of the Veterinary Educational Trust, will be in attendance at the Trust's pavilion on the Royal showground at Lincoln for the whole period of that event and will be ready to answer any questions regarding the activities of the Trust and its latest work in connection with cleaning up the health of the livestock of the farm, particularly the nation's dairy herds.

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Weekly Wisdom

Formerly a criterion of a good surgeon was speed, now it is gentleness in the manipulation of tissues. Because of better anaesthetics and better methods of inducing and maintaining anaesthesia, speed in operations has lost its value, but retained its disadvantages.—Vet. Med.

NOTES AND NEWS

Diary of Events

June 23rd—28th.—Joint Summer Meeting of the British Grassland Society and British Society of Animal Production, at Aberystwyth. (Papers, Demonstrations and Visits to Stations and Farms).

June 24th.—Meeting of the Welsh Branch, N.V.M.A., at Penglais, Aberystwyth, 11.30 a.m. Joint Meeting with British Society of Animal Production, 2 p.m.

June 25th.—Meeting of the South-Eastern Division, N.V.M.A., at Frant, Nr. Tunbridge Wells (The Wellcome Veterinary Research Station), 11 a.m.

June 25th.—Meeting of the Scottish Metropolitan Division, N.V.M.A., at Galashiels (Royal Hotel), 2.30 p.m.

June 26th and 27th.—R.C.V.S. Written Examinations.

July 11th.—Annual Meeting of the Society of Veterinary Practitioners, at the Holborn Restaurant, W.C.1, 2.30 p.m.

July 11th.—Annual Meeting of the Sussex Division, N.V.M.A. at Brighton (Old Ship Hotel), 2.30 p.m.

July 18th.—Meeting of the Yorkshire Division, N.V.M.A., at Harrogate (Queen Hotel), 2 p.m., followed by Surgical Demonstrations at Starbeck Abattoir.

July 27th—Aug. 1st.—N.V.M.A. Annual Congress in Edinburgh.

July 31st.—12th Annual Meeting of the Royal (Dick) Veterinary College Alumnus Association, at the Royal British Hotel, Princes Street, 7 p.m.

July 31st.—Annual Meeting of the Association of Veterinary Teachers and Research Workers, at the Royal (Dick) Veterinary College, Edinburgh, 10.30 a.m.

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Delegates to the Edinburgh Congress

The following are delegates from other countries who have accepted invitations to attend the Association's 1947 Congress:—

From America: Colonel H. E. EGAN, of the American Veterinary Medical Association.

From Belgium: Professor LIEGEOIS, of Union Vétérinaire Belfe.

From Denmark: Dr. N. PLUM, of the Danish Veterinary Association.

From Sweden: Professor KARL ERIKSSON, of the Veterinary School, Stockholm.

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Ministry of Agriculture—Veterinary Appointments

Resolutions by Divisions

AYRSHIRE DIVISION

The following resolution, passed by the Ayrshire Division on May 27th, has been received through the Hon. Secretary of the Scottish Branch of the Association:—

"This Division considers that the Council, N.V.M.A., should receive every support from the branches, divisions and individual members of the Association in any efforts it may make to improve the conditions of service within the Animal Health Division of the Ministry of Agriculture."

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LANCASHIRE DIVISION

At its meeting on June 11th, the Lancashire Division, N.V.M.A., passed the following Resolution:—

"The Lancashire Division of the N.V.M.A. cordially endorses the action taken by the Council of the Association in support of efforts to secure fair conditions of service for the professional staff of the Ministry of Agriculture and Fisheries and urges the Minister to reconsider his decision which is causing such unfavourable repercussions throughout the Veterinary Profession."

CENTRAL DIVISION

The following Resolution was passed by the Central Division at its meeting on June 12th:—

"This meeting of the Central Veterinary Society supports the Council of the National Veterinary Medical Association in deploring the decision of the Minister of Agriculture regarding salaries and conditions of service of Veterinary Officers of the Animal Health Division, Ministry of Agriculture.

"This meeting considers that this attitude is bound to prejudice the future welfare of the livestock industry and the essential increase in quantity and quality of foods of animal origin for the success of which a proper recognition of the status of the veterinary profession is necessary. This Society, the Central Division of the National Veterinary Medical Association, therefore endorses the actions so far taken by the Council of the National Veterinary Medical Association and urges that there be no relaxation in its efforts on behalf of the Veterinary Officers of the Ministry of Agriculture."

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ROYAL COLLEGE OF VETERINARY SURGEONS

Mr. Howard Dawes Re-elected President

Our readers will learn with much pleasure that, at the special meeting of Council held at 10, Red Lion Square, London, W.C.1, on June 5th, Mr. Howard Winnington Dawes, M.R.C.V.S., of Camden House, West Bromwich, was re-elected President of the Royal College of Veterinary Surgeons.

Mr. Howard Dawes was elected to Council in 1934, and his re-election as President will be universally acclaimed as a signal mark of the profession's esteem, and of its continued confidence in his leadership. A biographical appreciation of the President appeared in our columns on August 24th last year.

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R.C.V.S. Roll of Honour

As our readers will be aware, it is proposed to erect a War Memorial Tablet in the College buildings in London in honour of those members of the Royal College who lost their lives in the late war. A list of names for entry on the Roll of Honour, compiled from various sources, has been circulated by the Royal College to every member. If, however, any member has knowledge of additional names for inclusion therein, it would be appreciated if such information were passed, not to this office, but to the Registrar, Royal College of Veterinary Surgeons, 10, Red Lion Square, London, W.C.1.

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Exchange of Correspondence between Children of French and English Veterinary Surgeons

In accordance with a wish expressed to Monsieur P. E. Godechoux, Editor of *L'Action Vétérinaire*, by a number of French veterinary surgeons, our co-operation has been sought in the establishment of a service for the exchange of correspondence between the children of French and English veterinary surgeons. We welcome the proposal cordially, believing that such mutual correspondence would not only be in itself of educational value, but would lead to further friendly intercourse, such as alternate visits by the children during the holidays, which would be of service in extending the happy relationship already existing between members of the profession in both countries.

We are glad to learn, therefore, that at our suggestion and to ensure an even distribution of correspondence, Mr. Godechoux has kindly undertaken to act as the medium through whom intending correspondents can be put in touch with one another. Readers interested are requested to write to Monsieur Godechoux at the offices of *L'Action Vétérinaire*, 98, Avenue de Suffren, Paris, XVe, giving the age and sex of their children.

PERSONAL

R.C.V.S. Fellowship Awards.—At the meeting of the Council of the Royal College of Veterinary Surgeons held on June 3rd the Diploma of Fellowship was awarded to Mr. William Francis Davison, M.R.C.V.S., of Dublin, and to Dr. Edwin George White, B.SC., M.R.C.V.S., late of the Royal Veterinary College and now of the Rowett Research Institute, who recently has been appointed the first Director of the East African Central Veterinary Research Institute, Kabete, Kenya. The subject of Mr. Davison's thesis was "Hormonal Therapy in the Treatment of Sterility in the Mare," and of that by Dr. White "The Toxicity of Flaking Lead Paint for Calves."

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Colonial Veterinary Service Appointment.—Mr. Derek E. Faulkner, B.V.SC. (TOR.), M.R.C.V.S., Principal Veterinary and Agricultural Officer Swaziland, South Africa, has been appointed Deputy Director of Veterinary Services, Kenya.

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Birth.—BARNARD.—On June 8th, 1947, at 5, Estcourt Street, Devizes, Wilts., to Barbara, wife of Geoffrey M. Barnard, M.R.C.V.S., a second daughter (Wendy Anne).

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Marriage.—THOMPSON—RABAGLIATI.—At the Church of St. John the Evangelist, Edinburgh, on June 12th, 1947, by the Rev. Cyril Brown, M.A., assisted by the Rev. A. G. MacIntyre, Colin Merrik Dudley Thompson, son of the late Claude D. Thompson, of Wenvoe, Cardiff, and the late Mrs. Thompson, of Cinder Paddocks, Chailey, Sussex, to Sylvia Lucy, daughter of Major and Mrs. D. S. Rabagliati, Fidra, St. Margaret's Road, Edinburgh.

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R.C.V.S. OBITUARY

BLENCH, John, of Birdgate, Pickering, Yorks. Graduated Edinburgh, April 27th, 1878. Died June 5th, 1947; aged 93 years.

MR. JOHN BLENCH, M.R.C.V.S.

In the death of Mr. John Blench, of Pickering, at the great age of 93 years, the profession loses one of its few, and most venerated nonagenarian practitioners. His death occurred suddenly at his home. Mr. Blench, who had good health up to the time of his death, collapsed in his bedroom and died almost immediately. He was a native of Thornley, County Durham, where he began a practice as a veterinary surgeon in 1887. He went to Pickering in the same year, and had lived and practised there ever since.

He was widely known among agriculturists in the district, but had not taken any part in public life. Mr. Blench is survived by a son and two daughters; his wife died some years ago.

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George Howie, F.R.C.V.S.

AN APPRECIATION

[Contributed]

The passing of George Howie has left a blank in a large circle of friends. George may not have earned the title "prominent" as far as our profession is concerned, but his niche in it may have thereby been all the finer in that, to those who really got to know him, he was greater than prominence might have made him. He endeared himself to his friends for his wide experience of the world and his keen interest in life, for a sound veterinary outlook, for a faculty for sterling friendship, for a cheeriness and happy enjoyment that all did not know, and for the staunchness, loyalty and honesty that made his friendship something worth receiving and the giving of it in return a joy.

George Howie left school to follow the sea, and spent three adventurous years travelling the oceans in sailing ships. His tales of those years have delighted many a company, and the seafaring life left their impress on him. Defective eyesight changed his plans and led to his decision to follow in his father's footsteps by adopting the veterinary profession as a career. He was one of the best students of his time and after qualifying in 1916 at the Royal "Dick" College he immediately joined the R.A.V.C. Service in India with journeys to China followed. Howie, on demobilization, joined the staff of Birmingham Corporation and then followed a term on the Armstrong College Staff.

When Aberdeenshire decided to appoint a whole-time Veterinary Officer for the County, Howie was the unanimous and natural choice for the post—a choice that led to a most profitable and happy unofficial co-ordination of the Veterinary services of Aberdeen City and Aberdeen County. When the Ministry of Agriculture and Fisheries took over, Howie remained in his native county as Divisional Officer, where his popularity with the farming community and its confidence in him were assured. In his quiet but highly efficient way he did grand work.

And so George Howie has now gone from us at an early age, mourned by a large circle of friends. To that circle his death brought a great sadness. Bright will be the memories of him, however, when we recall many of his characteristic "up-comes" and many of the incidents so definitely associated with our friend, who by his travels and wide reading gleaned so much from life.

The deepest sympathy of us all goes to his widow and two sons.

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THE VETERINARY EDUCATIONAL TRUST

Veterinary Research Training Scholarships Awarded

In its work for the promotion of animal health one of the principal activities of the Veterinary Educational Trust is concerned with efforts to remedy the deficiency of trained personnel and of facilities for research in the various branches of veterinary science. Numerous scholarships have already been awarded by the Trust, and the number will be increased as and when available resources permit.

The Trust announces the award of research training scholarships to the following for specialization in the directions indicated. The amount of the scholarships is £340 per annum and they are usually tenable, upon good report, for three years. These scholarships will begin in October.

S. V. Boyden (Royal Veterinary College, London), Comparative Pathology at Cambridge.

B. A. Cross (Royal Veterinary College, London), Animal Physiology at Cambridge.

C. Le Q. Darcel (Royal Veterinary College, London), Pathology, with especial reference to poultry disease, at Cambridge.

J. R. Holmes (University of Liverpool), Biochemistry and metabolic troubles of cattle, at Liverpool.

G. B. Young (Glasgow Veterinary College), Genetics and Animal Breeding at University of Edinburgh.

BIOGRAPHICAL NOTES

S. V. Boyden (Royal Veterinary College, London), of Tadworth, Surrey. Educated St. John's School, Leatherhead. Passed first and fourth M.R.C.V.S. examinations with second class honours and is taking final M.R.C.V.S. and final B.Sc. (Vet. Sc.) in 1947. He is senior student Officer of the Royal Veterinary College Medical Association. Mr. Boyden will proceed to Jesus College, Cambridge, October, 1947, to read part II Natural Science Tripos in pathology. He hopes to specialize in comparative pathology.

B. A. Cross (Royal Veterinary College, London), of Worthing, Sussex. Educated Reigate Grammar School. Secured Surrey County Major Scholarship in 1943. Obtained second class honours in second year M.R.C.V.S. examination; taking final in July. President, 1946-47, of R.V.C. Students' Union and President of the Association of Veterinary Students. He is proceeding to St. John's College, Cambridge, October, 1947, and will be reading part II Natural Science Tripos in physiology, hoping later to specialize in animal physiology.

Colin Le Quesne Darcel (Royal Veterinary College, London), of Ringwood, Hants. Educated County High School, Brockenhurst, Hants. Second class honours in fourth M.R.C.V.S. examination; taking final M.R.C.V.S. July and final B.Sc. (Vet. Sc.) in October. Proceeding to Cambridge to read for part II National Science Tripos in pathology with a view to specializing in poultry diseases.

J. R. Holmes (University of Liverpool), of Little Eccleston, near Preston. Educated Preston Grammar School. Exempt first M.R.C.V.S. examination, second class honours in second and third and first class honours in fourth M.R.C.V.S. examinations. In various B.V.Sc. examinations received distinctions in chemistry, physiology and biochemistry, general embryology, animal husbandry, genetics, pharmacology, pathology and bacteriology, and in parasitology. Received the R.C.V.S. Walley Memorial Prize, 1946, and the Evans Final Year Studentship of the Veterinary Educational Trust for Liverpool, 1946. He will continue to study at Liverpool in the biochemistry department following his final M.R.C.V.S. and B.V.Sc. examinations and hopes to specialize later in metabolic disorders of dairy cattle.

G. B. Young (Glasgow Veterinary College), of Glasgow. Educated Albert Road Academy, Glasgow. Takes final M.R.C.V.S. examination in July. Proceeds to the University of Edinburgh for studies in genetics and hopes to prepare for a teaching and research post in animal husbandry.

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Sir Eric Ohlson, BT., Friar Inges Stud, Southella Hall, Kirkella, Hull, has presented the Veterinary Educational Trust with a large picture of Dante, his Derby winner, and it will adorn the main office of the Equine Research station at Balaton Lodge, Newmarket.

Mr. W. P. Owen, Secretary of the Australian Jockey Club, has written to the Duke of Norfolk, President of the Veterinary Educational Trust, expressing the Club's delight at the establishment of an Equine Research Station at Newmarket and stating that all the principal Clubs in the Commonwealth of Australia will contribute to its funds, while from the Jockey Club of South Africa the Trust has received a communication declaring the keen interest of their Stewards in the Station and their desire that the J.C.S.A. should be associated with the undertaking. The Research Station, they state, "should prove of immense value to horse-breeding throughout the world."

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Earmarked for the new Canine Research Station which the Veterinary Educational Trust is establishing a gift of 200 guineas has been received from the Tail Waggers' Club of Great Britain.

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Arising from the sale of catalogues at the pre-view of the late Mr. Tresham Gilbey's sporting pictures, the Trust has benefited to the extent of £64 12s.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confined, followed by the postal address and the date of outbreak.

FOOT-AND-MOUTH DISEASE:

Glamorgan.—Garren Farm, Cowbridge, and Sutton Farm, Moulton, Wenvoe, Cardiff, Glamorgan (June 13th).

SWINE FEVER:

Wilts.—Bell Inn, Lydeway, Devizes, Wilts (June 12th).

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LEGAL NOTES

VETERINARY COUNCIL OF IRELAND'S SUCCESSFUL PROSECUTION

The *Dublin Evening Mail* of June 9th reports that at Birr Court, Edward King, Grange, Lorrha East, Birr, was fined £5, with £18 9s. expenses, when prosecuted by the Veterinary Council of Ireland for practising veterinary surgery by operating with a probang on a cow owned by Michael Quigley, Ballyglass, Portumna, while not being a registered veterinary surgeon.

Michael Quigley gave evidence that one of his cows got a potato stuck in her gullet, and he was unable to free it. She was choking, but because he was a poor man he went to King to treat her, thinking King would be cheaper than a veterinary surgeon.

He had to go seven miles for King, and pass through Portumna, only four miles from his house where Mr. Condron, the local veterinary surgeon lived, to get to King's place.

King came out with a tube which he pushed down the cow's neck, and then, saying he would "leave her for a while" and that "she would be all right," told witness to "poultice her throat on the outside with mangold pulp in an old bag."

He charged witness 15s. and went away.

Witness remained up with the cow, poulticing her neck, until five a.m. next day. She got worse during the night and swelled up, and in the morning witness went for Mr. Condron, M.R.C.V.S. The cow had to be destroyed, on humane grounds. Before she was killed King offered witness £10 for her, and although witness valued her at £25 he agreed to sell, but there was no sale.

Mr. G. C. Condron, M.R.C.V.S., gave evidence that when he went to the cow, she was suffering from tympany, and in great pain and distress. There was nothing he could do to bring relief, so he recommended that the animal be destroyed. King alleged that if the animal was poulticed, as recommended, she would be all right, but external poulticing was useless in such cases. The only remedy for choking was manipulation of the obstruction, and failing that, injections of saliva-promoting fluid which would cause mastication and loosening of the obstruction. For tympany a surgical operation, failing other release of the stomach gases, was the remedy.

If he had been called in time, he could have saved the cow.

The use of a probang was purely exploratory and not to push an obstruction down an animal's neck.

He performed a *post-mortem* examination, which showed a ½ inch rent in the animal's throat above the place the potato was jammed, and that was caused by the operation to remove the potato.

Sergt. D. Corrigan gave evidence of the destruction of the cow and of seeing the rent referred to by Mr. Condron.

PROBANG "A DANGEROUS WEAPON IN UNSKILLED HANDS"

Professor P. A. McGeady, Professor of Surgery, Veterinary College, Ballsbridge, in evidence, described the probang as "a dangerous weapon in unskilled hands," and said that in cases of emergency tympany could be relieved by puncturing the flank of the affected animal.

Edward King (defendant) gave evidence that during last winter he treated 16 cows that were choking, using the probang successfully in each case.

He used it for 30 years with 99 per cent. success. The probang was an instrument in common use on farms, and one was "hanging up in the kitchen chimney of every farm."

The purpose of the hot mangold pulp poultice was to "cook the potato in the cow's throat, thus making it soft so that it would slip down to the stomach."

Recalled to give evidence as to the common use of the probang, Professor McGeady said that he himself, even as a skilled surgeon, would hesitate strongly before performing such an operation as done by King, and as for the probang itself, it was a deadly weapon in the hands of an inexperienced person. He had never seen it in common use.

Imposing the fine, Justice Coffey fixed recognisances for an appeal and said he would be very interested in the result of the appeal.

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H.M. STATIONERY OFFICE PUBLICATIONS

The undermentioned have been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office.

	Price net s. d.	*Post free* s. d.
STATUTORY RULES AND ORDERS, 1947:		
1079. Livestock (Restriction on Slaughtering) Order. June 2nd. (Published June 6th, 1947).	1	2
1080. Livestock (Restriction on Slaughtering) (Northern Ireland) Order. June 2nd. (Published June 6th, 1947).	1	2
PUBLICATIONS OF THE GOVERNMENT OF NORTHERN IRELAND		
SERATE BILLS:		
No. 2 dated May 27th, 1947, Artificial Insemination of Animals	3	4

Full details of the grants for improvement of hill farming land in England and Wales are given in H.F. 24, a leaflet issued by the Ministry of Agriculture. Copies are obtainable from Block 4, Bickenhall Mansions, London, W.1 (Welsh version from 17, Eastgate, Aberystwyth).

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It is announced by the Council of the National Greyhound Racing Society that Group Captain Sir Louis Greig will succeed the late Lord Askwith as Chairman of the Council.

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The Milk Marketing Board have purchased Brook House, Buxton, with buildings and land, for use as a central artificial insemination centre. From there a number of sub-centres will link up with that at Sutton Bonington.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Parasitic Mange*	Sheep Scab	Swine Fever
May 1st to 15 h, 1947	7	—	67	—	1	—
Corresponding period in—						
1946	3	1	—	—	—	20
1945	1	3	—	—	—	43
1944	8	—	—	—	—	52
Jan. 1st to May 15:h, '47	34	83	205	1	19	14
Corresponding period in—						
1946	44	23	—	4	34	238
1945	44	76	—	5	37	418
1944	94	19	—	5	58	266

NOTE.—The figures for the current year are approximate only.
* Excluding outbreaks in Army Horses.